

Attachment 8

Quality Assurance

Quality Assurance

Groundwater Recharge Mapping and Water Quality Protection Program Western Placer County, California

The plan participants understand that quality assurance is of the utmost importance to obtain high quality and defensible data. For example, the City of Roseville with the installation of monitoring wells to support their Aquifer Storage and Recovery Program have had to submit to the Regional Water Quality Control Board and adhere to a sampling and analysis plan and a monitoring and reporting program, as well as submit a monitoring well construction plan.

For the Groundwater Recharge and Water Quality Protection Program (Program) the quality assurance elements for well construction and testing include the following activities:

- On-site hydrogeologist/geologist during monitoring well drilling, construction, and water quality sampling activities.
- Adherence to a health and safety plan provided by contractor and reviewed by the plan participants before the commencement of field work.
- Daily documentation of field activities.
- Geophysical logging of drill cuttings (soil logging).
- Disinfection of all equipment that is placed in the borehole/monitoring wells.
- Inspection of all monitoring well materials by an experienced hydrogeologist/geologist.
- Groundwater elevation measurements and groundwater quality sampling by trained field technicians.
- Periodic manual groundwater elevation measurements to back up pressure transducer readings.

A summary of Program activities and the quality assurance components, including a listing of relevant professional certifications of reviewing personnel and reference material, are provided in Table 8-1.

**Table 8-1
Summary of QA/QC Measures**

Project Activities	Relevant Certifications of Reviewing Personnel	Reference Standards	Comments
Monitoring Well Design	California Professional Geologist (PG), Certified Hydrogeologist, Professional Engineer (PE)	Driscoll, F.G., 1987. Groundwater and Wells, California Department of Water Resources Bulletins 74-81 and 74-90, ASTM Designation D 5092-90 Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers, National Water Well Association 1989 Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Well, Nielson, Davis M. (ed.), 1991. Practical Handbook of Ground-Water Monitoring	Well specifications and drawings will be prepared under the direct supervision of certified professionals and final documents will be stamped and signed by these individuals
Monitoring Well Drilling and Construction	California Licensed Water Well Driller (C-57)	Driscoll, F.G., 1987. Groundwater and Wells, Roscoe Moss Company, 1990-Handbook of Groundwater Development, ASTM D5521-94e1 Standard Guide for Development of Ground-Water Monitoring Wells in Granular Aquifers.	Borehole drilling and well construction will be performed by a licensed drilling contractor under the direct supervision of a professional geologist or professional engineer
Construction Management Oversight	California Professional Geologist	City of Roseville Well Standards	Drilling and logging activities will be overseen by a geologist or hydrogeologist experienced in managing field activities associated with drilling and this activity will be supervised by a California Professional Geologist/Certified Hydrogeologist. The same applies to well construction and development activities, however these activities may also be supervised by a professional engineer.
Groundwater Sampling	California Professional Geologist, Certified Hydrogeologist	ASTM D6634-01 Standard Guide for the Selection of Purging and Sampling Devices for Ground-Water Monitoring Wells, ASTM D6452-99 Standard Guide for Purging Methods for Wells Used for Ground-Water Quality Investigations, U.S. Environmental Protection Agency, 1986. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, OSWER-9950.1, September.	Groundwater sampling, sample management and field documentation will all be supervised by a Certified Hydrogeologist
Sample Management	California Professional Geologist, Certified Hydrogeologist	U.S. Environmental Protection Agency, 1996. EPA Test Method for Evaluating Solid Waste Physical/Chemical Methods (SW-846), U.S. EPA Third Edition, September 1986; Final Update III, December 1996.	Groundwater sampling, sample management and field documentation will all be supervised by a Certified Hydrogeologist
Laboratory Analysis	EPA and California Certified Analytical Laboratory	California Code of Regulations (CCR) Title 22 Social Security, Division 4 Environmental Health, Chapter 19 Certification of Environmental Laboratories	Environmental Laboratories and Analytical test methods shall adhere to the definitions, certifications and amendments outlined in the CCR.
Field Documentation	NA	ASTM D6089-97e1 Standard Guide for Documenting a Ground-Water Sampling Event	Groundwater sampling, sample management and field documentation will all be supervised by a Certified Hydrogeologist
Soil Logging	Professional Geologist, Geotechnical Engineer	ASTM, 2000, Standard D2488-00 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), Unified Soil Classification System, Macbeth, 1992, Munsell Soil Color Charts.	Soil Logging will be performed by an experienced field geologist or engineer under the direct supervision of a California Certified Hydrogeologist
Water Level Measurements (Pressure Transducer Installation)	NA	Standard Operating Procedure for Manual Water Level Measurements - Appendix C of WPCGMP.	A Standard Operating Procedure has been developed by the plan partners in the WPCGMP for collection of groundwater level measurements. This Standard will be applied.
Surveying	Land Surveyor Licensed in California	Professional Land Surveyors' Act - (Business and Professional Code 8700 8805)	All work will be performed by a California Licensed Surveyor. Surveying report will be stamped and signed by the licensed professional.
Data Management Systems	NA	NA	The plan partners will enter data to the DMS as part of the implementation of the WPCGMP. Data types include: well construction, water level, water quality, groundwater and surface water production.